^{70}Co β^- decay (112 ms) 2015Pr10,2003Sa40,2000Mu10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	G. Gürdal, E. A. Mccutchan	NDS 136, 1 (2016)	1-Jul-2016

Parent: ^{70}Co: E=0.0; J^π=(6$^-$,7$^-$); $T_{1/2}$=112 ms *7*; Q(β^-)=1.23×10^4 *3*; %β^- decay=100.0

2000Mu10,1998Fr15: ^{70}Co activity from proton-induced fission of ^{238}U with E(p)=30 MeV. Fission products separated using laser ionization and mass separation with the LIGLIS-LISOL setup. Measured Eγ, Iγ, $\gamma\gamma$, $\beta\gamma$ coincidences using two HPGe detectors and three ΔE plastic scintillator detectors.

2003Sa40,2003GrZZ: ^{70}Co activity from ^{nat}Ta(^{86}Kr,X) with E(^{86}Kr)=58 MeV/nucleon. Reaction products separated with the LISE2000 spectrometer. Measured Eγ, Iγ, $\beta\gamma$ using four Clover-type EXOGAM Ge detectors and a stack of four Si detectors, one a double-sided Si strip detector.

2015Pr10: ^{70}Co activity from ^{9}Be(^{76}Ge,X) with E(^{76}Ge)=130 MeV/nucleon. Reaction products separated with the A1900 fragment separator and identified with ΔE-TOF measurements. Measured Eγ, Iγ, $\beta\gamma$, $\gamma\gamma$, β(t), $\beta\gamma$(t) using 16 detectors of the segmented Ge array (SeGA) for γ's and a planar Ge double-sided strip detector for β's.

With a Q value of 12.3 MeV *3* and a highest observed level of 3.6 MeV, the evaluators consider this decay scheme to be incomplete and thus, do not provide a normalization or β-feeding intensities.

^{70}Ni Levels

The 3146 and 3361-keV levels proposed in 2003Sa40 and 2000Mu10 are not adopted here since subsequent measurements in 2015Pr10 and in the ^{208}Pb(^{70}Zn,Xγ) reaction found alternate placements for the 916γ and 683γ transitions proposed to depopulate these levels.

E(level)†	J^π‡	$T_{1/2}$‡
0.0	0$^+$	6.0 s *3*
1259.0	2$^+$	
2228.7	4$^+$	
2677.2	6$^+$	
2911.8	(5,6$^+$)	
3592.4		

† From at least-squares fit to Eγ, by evaluators.
‡ From the Adopted Levels.

γ(^{70}Ni)

Eγ†	Iγ‡	E$_i$(level)	J_i^π	E$_f$	J_f^π	Comments
234.6	5.2 *5*	2911.8	(5,6$^+$)	2677.2	6$^+$	
448.5	38 *3*	2677.2	6$^+$	2228.7	4$^+$	Iγ: others: 37 *8* (2003GrZZ), 80 *5* (2000Mu10), 68 *20* (2003Sa40).
x680.3#						
x683.3#						
x846.4#						
915.2	29 *2*	3592.4		2677.2	6$^+$	Eγ: a 916γ with Iγ=59 *19* was placed from a 3146-keV level by 2003Sa40,2003GrZZ; transition not observed by 2000Mu10.
969.7	58 *4*	2228.7	4$^+$	1259.0	2$^+$	Iγ: others: 89 *12* (2003GrZZ), 97 *7* (2000Mu10), 116 *35* (2003Sa40).
x1079.9#						
1259.0	100 *7*	1259.0	2$^+$	0.0	0$^+$	Iγ: others: 100 *13* (2003GrZZ), 100 *10* (2000Mu10), 100 *35* (2003Sa40).
x1392.6#						
x1641.5#						
x1676.7#						

Continued on next page (footnotes at end of table)

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$\gamma(^{70}Ni)$ (continued)

† From 2015Pr10.
‡ From 2015Pr10. Values from 2000Mu10, 2003Sa40, and 2003GrZZ are given in the comments. In each of these works, the authors quoted intensities with different relative normalizations. To enable a better comparison to the values from 2015Pr10, the evaluators have renormalized the 2000Mu10, 2003Sa40, and 2003GrZZ values to Iγ(1259.0γ)=100.
# Indicated in Figure 1 of 2015Pr10 as originating from the high-spin, β-decaying level in ^{70}Co, by not placed in the level scheme.
^{x} γ ray not placed in level scheme.

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Decay Scheme

Intensities: Relative I_γ